IN THE CLAIMS:

Claims 1-29 were canceled by the Preliminary Amendment filed July 14, 2000.

Kindly amend the claims 30-44, as follows:

1 30.   (Currently amended) A router for use in routing packets over a network, the

2 router supporting a plurality, X, of classes of service and including:

3   A. a plurality of input ports for receiving packets over the network;

4   B. a plurality of output ports for transferring packets over the network;

5   C. a classifier for assigning packets received by the input ports to X * Y classes

6 of service, where * represents multiplication, and mapping the XY classes of service to

7 the X classes of service that are supported by the router, the classifier assigning to the

8 packet one of Y associated levels of priority, wherein each level of priority is associated

9 with a different probability of packet loss;

10   D. a buffer subsystem for retaining the packets in class of service per output port

11 queues based on probabilities of discard associated with the X * Y classes of service; and

12   E. a scheduler for transferring the packets from the buffer subsystem through

13 each of the output ports based on the X classes of service.

1 31.   (Original)   The router of claim 30 wherein the buffer subsystem includes mul-

2 tiple storage locations and links available storage locations in a free queue.

1 32.   (Original)   The router of claim 31 wherein the buffer subsystem includes a

2 processor that determines:

3   i. a new weighted average depth for the free queue, and

4   ii. a probability of discard for a given packet if the new weighted average queue

5   depth falls below a predetermined maximum threshold associated with the class of serv-

6   ice to which the packet is assigned by the classifier.

1   33.   (Original)   The router of claim 32 wherein the buffer subsystem discards a

2   given packet if the associated new weighted average depth for the free queue falls below

3   a minimum threshold associated with the class of service to which the packet is assigned.

1   34.   (Original)   The router of claim 33 wherein the buffer subsystem processor cal-

2   culates the probability of discard as $P_d = c-(m*A_{NEW})$ where c is an intercept and m is a

3   slope that is associated with a line that plots average free queue depth versus probability

4   of discard for the class of service to which the packet is assigned, and A_{NEW} is the new

5   weighted average depth of the free queue.

1   35.   (Original)   The router of claim 34 wherein the buffer subsystem processor cal-

2   culates the new weighted average depth of the free queue as $A_{NEW} = A_{CURRENT} + w(I-$

3     $A_{CURRENT})$ where w is a weighting factor, I represents the instantaneous depth of the free

4   queue and $A_{CURRENT}$ is the current weighted average depth of the free queue.

1   36.   (Currently amended) The router of claim ~~35~~ 30 wherein the scheduler selects

2   from the buffer subsystem packets for transfer based on weighting factors associated with

3   the respective 2^n X classes of service.

1   37.   (Original)   A router for use in routing packets over a network, the router sup-

2   porting a plurality, X, of classes of service and including:

4

3   A. a plurality of input ports for receiving packets over the network;

4   B. a plurality of output ports for transferring packets over the network;

5   C. a multiple storage location buffer for retaining packets to be transferred

6   through the output ports;

7   D. a buffer subsystem for retaining the packets in class of service per output port

8   queues based on probabilities of discard associated with X*Y classes of service, where *

9   represents multiplication; and

10   E. a scheduler for transferring the packets from the buffer subsystem through each

11   of the output ports based on the X classes of service that the router supports.

1   38.   (Currently amended) The router of claim 37 further including a classifier for:

2   i. assigning packets received by the input ports to X*Y classes of service,

3   ii. associating the packets with the X*Y $\underline{X}$ classes of service that are supported by

4   the router, and

5   iii. assigning to the packet one of X*Y $\underline{Y}$ associated levels of priority, wherein

6   each level of priority is associated with a different probability of packet loss.

1   39.   (Currently amended)   The router of claim 38-$\underline{37}$ wherein the buffer subsystem

2   includes a processor that determines

3   i. a new weighted average queue depth for a free queue that links available buffer

4   storage locations, and

5   ii. a probability of discard for a given packet if the new weighted average free

6   queue depth falls below a predetermined maximum threshold associated with the class of

7   service to which the packet is assigned.

1   40.   (Original)   The router of claim 39 wherein the buffer subsystem processor cal-

2   culates the probability of discard as $P_d = c-(m*A_{NEW})$ where c is an intercept and m is a

3   slope that are associated with a line that plots average free queue depth versus probability

4   of discard for the class of service to which the packet is assigned, and A_{NEW} is the new

5   weighted average depth of the free queue.

1   41.   (Original)   The router of claim 40 wherein the buffer subsystem processor cal-

2   culates the new depth of the weighted average free queue as $A_{NEW} = A_{CURRENT} + w$ (I-

3    $A_{CURRENT}$) where w is a weighting factor, I represents the instantaneous depth of the free

4   queue and $A_{CURRENT}$ is the current weighted average depth of the free queue.

1   42.   (Currently amended)   The router of claim ~~41~~ 40 wherein the buffer subsystem

2   discards a given packet if the new weighted average free queue depth falls below a mini-

3   mum threshold associated with the class of service to which the packet is assigned.

1   43.   (Currently amended)   The router of claim ~~41~~ 40 wherein the buffer subsystem

2   retains a given packet if the new weighted average free queue depth is above a maximum

3   threshold associated with the class of service to which the packet is assigned.

1   44.   (Currently amended)   The router of claim 37 wherein the scheduler selects pack-

2   ets for transfer through each output port based on weighting factors associated with the

3   respective ~~2^n~~ X classes of service.

Please add the following new claims 45 *et seq.*

1   45.   (New) An apparatus for routing packets through a router that supports a plu-

2   rality, X, of classes of service, the apparatus comprising:

3   means for receiving packets through one or more input ports and assigning the

4   packets to X*Y classes of service, where * represents multiplication;

5   means for retaining packets based on probabilities of discard associated with the

6   X*Y classes of service in a multiple storage location buffer that links available storage

7   locations to a free queue; and

8   means for transferring the packets through one or more output ports based on

9   the X classes of service.

1   46.   (New) The apparatus of claim 45, further including:

2   means for associating packets assigned to the X*Y classes of service with the X

3   classes of service supported by the apparatus; and

4   means for assigning to the respective packets one of Y associated levels of pri-

5   ority, each level of priority being associated with a different probability of packet loss.

1   47.   (New) The apparatus of claim 46, further comprising:

2   means for determining a new weighted average depth for the free queue; and

3   means for determining a probability of discard for a given packet if the new

4   weighted average free queue depth falls below a predetermined maximum threshold as-

5   sociated with the class of service to which the packet is assigned.

48.   (New) The apparatus of claim 47, wherein the means for retaining packets further comprises:

means for discarding a given packet if the new weighted average free queue depth is less than a minimum threshold associated with the class of service to which the packet is assigned.

49.   (New) The apparatus of claim 47, wherein the means for retaining packets further comprises:

means for retaining a given packet if the new weighted average free queue depth is greater than a maximum threshold associated with the class of service to which the packet is assigned.

50.   (New)   A computer-readable media, comprising:

instructions for execution in a processor for the practice of a method, said method having the steps,

receiving packets through one or more input ports and assigning the packets to X*Y classes of service, where * represents multiplication;

retaining packets based on probabilities of discard associated with the X*Y classes of service in a multiple storage location buffer that links available storage locations to a free queue; and

transferring the packets through one or more output ports based on the X classes of service.

51.   (New) The computer-readable media of claim 50, wherein the method further comprises the steps of:

3   associating packets assigned to the X*Y classes of service with the X

4   classes of service supported by the apparatus; and

5   assigning to the respective packets one of Y associated levels of priority,

6   each level of priority being associated with a different probability of packet loss.

1   52.   (New) The computer-readable media of claim 51, wherein the method further

2   comprises the steps of:

3   determining a new weighted average depth for the free queue; and

4   determining a probability of discard for a given packet if the new

5   weighted average free queue depth falls below a predetermined maximum

6   threshold associated with the class of service to which the packet is assigned.

1   53.   (New) The computer-readable media of claim 52, wherein the method further

2   comprises the step of:

3   discarding a given packet if the new weighted average free queue depth

4   is less than a minimum threshold associated with the class of service to which

5   the packet is assigned.

1   54.   (New) The computer-readable media of claim 52, wherein the method further

2   comprises the step of:

3   retaining a given packet if the new weighted average free queue depth is

4   greater than a maximum threshold associated with the class of service to which

5   the packet is assigned.

1   55.   (New) Electromagnetic signals propagating on a computer network, comprising:

2   instructions for execution on a processor for the practice of a method, said method

3 having the steps,

4   receiving packets through one or more input ports and assigning the

5   packets to X*Y classes of service, where * represents multiplication;

6   retaining packets based on probabilities of discard associated with the

7   X*Y classes of service in a multiple storage location buffer that links available

8   storage locations to a free queue; and

9   transferring the packets through one or more output ports based on the X

10   classes of service.

1 56.   (New) The electromagnetic signals of claim 55, wherein the method further

2 comprises the steps of:

3   associating packets assigned to the X*Y classes of service with the X

4   classes of service supported by the apparatus; and

5   assigning to the respective packets one of Y associated levels of priority,

6   each level of priority being associated with a different probability of packet loss.

1 57.   (New) The electromagnetic signals of claim 56, wherein the method further

2 comprises the steps of:

3   determining a new weighted average depth for the free queue; and

4   determining a probability of discard for a given packet if the new

5   weighted average free queue depth falls below a predetermined maximum

6   threshold associated with the class of service to which the packet is assigned.

1 58.   (New) The electromagnetic signals of claim 57, wherein the method further

2 comprises the step of:

3   discarding a given packet if the new weighted average free queue depth

4   is less than a minimum threshold associated with the class of service to which

5   the packet is assigned.

1   59.   (New)   The electromagnetic signals of claim 57, wherein the method further

2   comprises the step of:

3   retaining a given packet if the new weighted average free queue depth is

4   greater than a maximum threshold associated with the class of service to which

5   the packet is assigned.